

HERBERT BREWER

# Reversibility following Sterilization by Vasectomy

THE REMARKABLE SPREAD in recent years of the vasectomy operation as a means of fertility control in India, the U.S.A. and elsewhere brings into prominence the question of its reversibility. As the Director of the Population Council, Dr. Warren Nelson, has observed, "If the operation can be perfected so that the success rate is 85 or 90 per cent, it is likely that many people will find vasectomy an acceptable method of contraception."<sup>1</sup> In the U.S. according to a recent report, the number of vasectomies performed for contraceptive purposes has doubled in the last decade and now amounts to about 40,000 a year. The states of Virginia and North Carolina have enacted laws specifically permitting voluntary sterilization for the purpose of limiting family size.<sup>2</sup> It seems likely that more States will eventually follow suit.

In these circumstances it is readily intelligible that an increasing number of men are asking, what are the prospects of restoring fertility following a vasectomy operation. The answer on the whole is fairly encouraging. When Dr. V. J. O'Connor circularized the majority of urologists in the U.S. prior to 1948, he elicited that concerning the relatively few attempts at anastomosis following vasectomy that had been attempted, 45.5 per cent had been successful.<sup>3</sup> This was surprisingly good considering that most of these operations were intended to be definitively permanent and that surgeons rarely gave any attention to techniques calculated to maximize the prospects of success in reversal at a later time. More recently, with the development of better techniques, percentage success rates have been reported of 77 by Roland,<sup>4</sup> 80 by Dorsey,<sup>5</sup> the same also by Jhaver<sup>6</sup> and 88 by Phadke.<sup>7</sup> According to Dr. V. E. Goodwin of the Department of Urology in California University Medical School, "the sterility which results

from vasectomy is reversible in fully 90 per cent of cases if a skilful surgeon is available."<sup>8</sup>

However, it seems clear that relatively few surgeons have the opportunity of the extensive practice which is necessary to develop high skill in performing anastomosis of the vasa. Anything which can be done to simplify and, if possible, to speed up both the initial operation as well as its subsequent reversal would therefore appear to be highly desirable.

It has been noted by a number of authorities that both as regards animal and human subjects, spontaneous reunion of several vasa is prone to take place with great facility, so much so indeed, that in the initial operation it is a major pre-occupation of the operator to exclude that possibility. Dr. Walter Stokes, who has wide experience in this field, has stressed the importance of guarding against eventualities of this kind.<sup>9</sup> Professor Elmer Belt of California University Medical School states that even when vasectomy is performed with great care, recanalization automatically re-establishes itself in rare cases. He refers to a recent national survey in the U.S.A. in which urologists were asked about this particular point; in 971 replies to a questionnaire, there were reported 41 proven cases of spontaneous recanalization. In a second series of 750 replies there were 55 spontaneous recanalizations.<sup>10</sup> However, as Tietze has pointed out, vasectomy must still be regarded as the most certain of all methods of preventing conception.<sup>11</sup> According to Rolnick<sup>12</sup>

It has been recognized clinically for many years that attempts at sterilization by either cutting or tying the vas are often unsuccessful. I demonstrated many years ago that the vas deferens regenerates very rapidly after it has been cut or tied and that this regeneration is aided by its sheath. Therefore if vasectomy is to be properly done, a rather large portion of the vas should be

resected and the cut ends crushed and turned backwards. Successful regeneration of the vasa deferens is possible many years after resection. The remarkable regenerative capacity of all epithelial lined ducts is exemplified here as in other portions of the body, and it is chiefly this regenerative capacity that makes urologic surgery possible.

This lucid exposition reveals how in attempting to escape the Scylla of spontaneous recanalization the surgeon is prone to run into the Charybdis of irreversibility. For O'Connor noted as among the most frequent causes of failure to effect anastomosis the fact that so large a portion had been removed as to preclude bringing the severed ends together; another common cause was excising tissue too close to the globus major.<sup>13</sup> As another American surgeon has commented, why should we find it so difficult to recanalize the vasa, when nature finds it so easy? What it is now desired to suggest is that it may be possible, by working with nature instead of against it, to take advantage of the very healing power revealed in the tendency to spontaneous reunion, both to make the initial sterilizing operation more simple and certain, while at the same time conserving tissue and maximizing the prospects of success in a reversing operation, should that subsequently be found desirable. It would appear a sound principle in surgical as in many other arts to aim at achieving the maximum by means of the minimum. Instead of cauterizing, crushing and ligating, why not invoke the *vis medicatrix naturae* itself to set up a barrier to the exit of the sperms more effective than those imposed by man's rather clumsy mechanical devices.

In other words why should it not be possible by bringing the two proximal ends of the severed vasa into opposition and by allowing them to unite, effectively to exclude the possibility of sperms getting any further than the lower part of the scrotal sac, into which, if the distal ends were left open, they would presumably drain? Should it prove feasible, it would obviate certain drawbacks which have come to light in a small minority of vasectomies, in which ligating the distal ends of the vasa has caused discomfort by reason of back pressure. Also in the few cases in which inflammatory reactions have occurred as described by Friedman<sup>14</sup> and others may be associated with a faulty technique which might

similarly be obviated. An American surgeon who claimed to have performed over 400 vasectomies informed me that he had never encountered such reactions in his own patients, though he had seen them in other vasectomized men. This surgeon used pure phenol to cauterize the crushed and ligated proximal ends of the vasa while leaving the distal ends open. However, it may be noted that surgical lubricating jellies are capable of producing granulomatous lesions when they are employed without proper care.<sup>15</sup>

It was noted editorially in THE EUGENICS REVIEW that some surgeons who perform vasectomy leave the distal ends open in order to facilitate recanalization later.<sup>16</sup> One great advantage which might accrue from the adoption of the proposed technique is that it would encourage surgeons to perform the sterilizing operation with the idea of potential reversibility always in mind. When surgeons approach the operation with the idea of cutting something out rather than of imposing a simple occlusion, they tend to conceive the whole procedure in an obliterative light which is really not essential. That this may be so is suggested by the fact that in a recent exchange of letters in the *Observer* a surgeon of consultant status claimed in effect that vasectomy by definition is irreversible because you cannot replace something which earlier has been removed. It is true that, as a number of authorities have agreed, the term "vasectomy" is open to objection on semantic grounds. Should the proposed technique prove practicable and become widely adopted, it would seem a good opportunity to bring medical nomenclature more in accord with realities by distinguishing it from the earlier methods of vasectomy by designating it specifically and accurately as "Reversible Occlusion of the Vasa" (R.O.V. for short). The operation of R.O.V. in itself would provide the best possible education of the surgeon in the hitherto infrequently practised art of reversal of sterilization by anastomosis of the vasa deferentis. In the initial operation a temporary sterility would be imposed by anastomosis of the proximal ends of the vasa, while in the reversing operation fertility would be restored by a precisely similar treatment applied to the severed ends so as to reunite them in the same position where they were at the beginning.

In this connection, it would appear that both the initial sterilization and the later desterilization might be immensely simplified, speeded up, and rendered less expensive by the utilization of surgical stapling machines, which seem likely to be adaptable readily to such operations as these. In 1961, a Russian surgeon gave a demonstration in Washington and showed by an operation on a dog's blood vessels and organs that procedures which, by traditional surgical stitching methods would take hours, could be performed in minutes by the aid of these suture replacing surgical stapling machines.<sup>17</sup> More recently, the Russian claims have been confirmed by American workers, some of whom have devised improvements to make the apparatus yet more simple and rapid in its operation. They claim that in this way it is now possible for ordinary surgeons successfully and rapidly to perform operations which otherwise would only be tackled by specialists using exacting and time consuming manipulations.<sup>18</sup>

It will readily be appreciated how important the application of R.O.V. by means of surgical stapling might conceivably become in connection with the programme of voluntary sterilization on mass scale, such as are now being attempted in India. For example, it is stated that in the Punjab the government has set itself a target of 100,000 vasectomies a year, but is finding it difficult to achieve it by reason of shortage of qualified personnel.<sup>19</sup> Even though, as Gopalaswami has claimed,<sup>20</sup> the cost of a sterilization operation in India is only one-tenth to one-twentieth that of providing a free supply of contraceptives to cover the reproductive span, the factor of cost is still critical. The idea presently being mooted<sup>21</sup> that the chief hope of overcoming the population explosion lies, not in the pill, but in the revival of the intra uterine devices that were emphatically condemned by the Family Planning Association a few years ago,<sup>22</sup> needs to be scrutinized critically from the cost angle also. Intra uterine devices demand periodical examination and gynaecological check, and even, according to some advocates, repeated X-ray examinations to ensure that they have not dropped out unobserved. The latter practice appears completely to ignore the warnings of the United Nations Committee on Atomic Radiation, which stressed that all forms of unnecessary radiation exposure

should be avoided; radiation of the female pelvis is especially dangerous because mutagenic effects, both somatic and genetic, are involved. Where the intra uterine device has failed to avert conception (as it is reported to do in at least 5 per cent of cases) teratogenic effects may also be involved concerning the highly vulnerable embryo. Failure to carry out periodical examinations may eventually confront the physician with a case like that described by Dr. Maizels where a long forgotten Gräfenberg ring seemed to have provoked a carcinoma.<sup>23</sup> The impracticability of using intra uterine devices on a mass scale in the backward countries has been well exposed by Dr. Elkan.<sup>24</sup>

On reasons alike of harmlessness, reliability and of cost, the vasectomy solution seems far preferable to that of intra uterine contraceptives which many authorities insist are really abortifacients. The writer is not a surgeon but is encouraged to submit these suggestions because so far the inquiries he has been able to make of medically qualified friends have raised no fundamental difficulty or objection.

In view of the almost desperate demographic situation that is building up in the world as a whole, it is surely only common sense to give attentive consideration to every constructive suggestion, regardless of whence it comes. If that were always done we might be in less danger of the tyranny of inert ideas which, as A. N. Whitehead stressed, represent a major menace to progress.

It is well to remind ourselves that Western Europe too has a problem of fertility control and that we can hardly be content to let it be solved by abortion which, as Professor Harmsen of Hamburg has reminded us, takes terrible toll of female health in destroying every year more human life than all the infectious diseases combined. The example of India surely reveals that voluntary sterilization by vasectomy offers a harmless and effective alternative to the policy of legalized mass abortion, whose evils are well recognized in the countries where it is most prevalent.

One last thought concerning the legal position in Britain. The possibility of reversal has an important bearing on the question of whether voluntary sterilization for purposes of contra-

ception is lawful. For if it can be shown that in accepting surgical occlusion of the vasa in order to avoid producing unwanted children, a man is only establishing a condition of temporary infertility which is capable of being removed, should he wish it, there can hardly exist any reason for treating him any differently from those who accomplish the same end by other contraceptive means. As Dr. Glanville Williams has pointed out,<sup>25</sup> vasectomy cannot be brought within the legal definition of a maim, if it can be shown to be reversible, because the legal meaning of a maim (as contrasted with a wound) is that it is permanent. The development of better methods of restoring fertility following vasectomy might indirectly help to clear up the medico-legal ambiguity which still surrounds voluntary sterilization in this country.

#### REFERENCES

1. Nelson, Warren O. 1961. *Fertil. and Steril.*, 12, 109.
2. *Newsweek*, 16.9.63.
3. O'Connor, V. J. 1948. *J. Amer. med. Ass.*, 136, 162.
4. Roland, S. I. 1961. *Fertil. and Steril.*, 12, 191.
5. Dorsey, J. W. 1957. *J. int. Coll. Surg.*, 27, 453.
6. Jhaver, P. S. 1962. *J. Family Welfare*, 9, 57.
7. Phadke, F. M. 1959. *J. Ind. med. Ass.*, 36, 19.
8. Goodwin, W. E. Personal communication.
9. Stokes, W. R. 1941. *Human Fertil.*, 6, 79.
10. Belt, E. 1964. *Sterilization: Can It Be Undone?* Pamphlet issued by the Human Betterment Association.
11. Tietze, C. 1960. *The Current Status of Fertility Control*. National Committee on Maternal Health Publication No. 9.
12. Rolnick, H. C. 1954. *J. Urol.*, 72, 915-16.
13. O'Connor, V. J. 1953. Second World Congress on Fertility and Sterility.
14. Friedman, N. B. et al. 1949. *J. Urol.*, 62.
15. *Brit. med. J.* 1961, 1082.
16. *Eugen. Rev.*, 1956, 48, 139.
17. *Washington Post*, 12.7.61.
18. Mallina, R. F. et al. 1962. Surgical Stapling. *Scientific American*, Oct.
19. Amirichand, Col. 1962. *Licentiate*, 12, 52. Reported in *J. Amer. med. Ass.*, 6.10.62.
20. Gopalaswami, R. A. 1962. Family Planning Outlook for Government Action in India, in *Research in Family Planning*. Editor, C. V. Kiser. p. 79.
21. *New Society*, 12.3.64, p. 19.
22. *Brit. med. J.*, 19.10.46 and 4.2.50.
23. Maizels, G. 1964. Fate of Gräfenberg Rings. *Brit. med. J.*, 14.3.64.
24. Elkan, E. 1964. *New Scientist*, 9.1.64.
25. Williams, Glanville. 1958. *The Sanctity of Life and the Criminal Law*, p. 103.

# EUGENICS QUARTERLY

Vol. 11, No. 3

Contents

September, 1964

- The New Outlook in Eugenics*, FRANK LORIMER
- Decline of Consanguineous Marriages in France from 1926 to 1958*, JEAN SUTTER AND JEAN-MICHEL GOUX
- Does the Effect of a Family Planning Program Continue?*, YOSHIO KOYA
- White and Non-white Fertility by Census Tract for 1960*, J. WILLIAM LEASURE AND NICHOLAS W. SCHROCK
- Relation of Fertility to Occupation and to Income in the Male Population of Ann Arbor, Michigan, 1951-1954*, LEE R. DICE, PHILIP J. CLARK AND ROBERT I. GILBERT
- Brief Reports:**
- Appraisals of Civilized Man and Savage*, R. H. POST
- Fertility Management and Concern with Over-Population in Mainland China*, AMRIT LAL
- Book Reviews*, CLYDE V. KISER, *Book Review Editor*
- Recent Publications*, HELEN G. HAMMONS

#### EDITORIAL BOARD

- Gordon Allen
- Frederick Osborn, *Chairman*
- RICHARD H. OSBORNE, *Acting Editor*
- Frank Lorimer
- Consulting Editors:* JAN BÖÖK, F. CLARKE FRASER
- CLYDE V. KISER, LEIGHTON VAN NORT, L. D. SANGHVI, JEAN SUTTER

Published by AMERICAN EUGENICS SOCIETY

230 Park Avenue, New York, 17, N.Y.

Subscription \$7.00; Single current copies \$1.75; Single back copies \$2.00